

## SPECIFICATION

## TITLE

METHOD FOR THE TRANSMISSION OF INFORMATION IN THE SUBSCRIBER  
LINE AREA

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## BACKGROUND OF THE INVENTION

## Field of the Invention

The invention is directed to a method for transmitting information in a subscriber line area with a subscriber line network.

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## Description of the Related Art

The transmission of information between a subscriber and the local exchange respectively allocated to the subscriber generally ensues via a subscriber line network that usually comprises a plurality of subscriber lines. In the prior art, these are composed of traditional copper leads (a/b leads), and the individual subscriber lines are bundled and brought to the appertaining local exchange.

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Only voice information had been transmitted via the subscriber line network in the past; however the transmission of data and information of a different nature has been gaining in significance in recent years. The transmission of voice information can be implemented with a relatively small bandwidth--far more bandwidth is required for the transmission of data. And historically, the transmission of data required installation of separate networks.

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Future communications systems could advantageously make use of the subscriber line networks that already exist for the transmission of data and information of higher bit-rate services. However, separate transmission methods must be developed to implement this. Such transmission methods include, for example, the xDSL (ADSL, HDSL, etc.) methods. The copper leads of the subscriber line network can thus be utilized up to transmission rates in the Mbit/s range on the basis of suitable transmission-oriented measures.

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The ADSL transmission method is asymmetrically designed. This means that a higher bit rate can be selected in a privileged direction at the expense of a

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lower bit rate in the opposite direction. For example, up to 6 Mbit/s can be sent to the subscriber proceeding from the network and 2 Mbit/s can be sent from the subscriber to the network. The disadvantage of such a procedure is that the privileged direction cannot be dynamically changed once it has been selected.

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## SUMMARY OF THE INVENTION

The invention is based on the object of providing flexible control for a bidirectional transmission between network and subscriber.

It is particularly advantageous in the invention that an interface is provided between the application level and the physical transmission to which control data are supplied by an evaluation of protocols. This involves the advantage that the privileged direction set by employing an xDSL method such as ADSL can be reconfigured by higher level protocols.

In the invention, a method for transmitting information in a subscriber line area with a subscriber line network is provided, comprising the steps of transmitting information via said subscriber line network according to an xDSL method; and supplying control data to an interface provided between an application level and a physical transmission with which an xDSL link can be dynamically reconfigured by an evaluation of protocols.

Advantageous embodiments include arranging said interface in a local exchange. The control data may be taken from signaling, from RM cells of ABR traffic, or from the Internet protocol.

## DESCRIPTION OF THE PREFERRED EMBODIMENTS

The invention is explained in greater detail below on the basis of an exemplary embodiment.

An interface is provided between the application level and the physical transmission, which is preferably arranged in the local exchange. Control data are offered via this interface with which the privileged direction of the transmission

method ADSL can be reconfigured—this reconfiguration is triggered by higher level protocols.

Higher level protocols are considered to be, for example, the signaling, and/or the evaluation of resource management cells in ATM networks or IP “flow detection” mechanisms. When the evaluation of a higher protocol level yields the need for a change of the required bit rate in a specific direction, then the xDSL link is correspondingly reconfigured. The physical elements, i.e., the copper leads, are thus always optimally adapted and utilized according to need. Depending on the type of applied use, thus, the network-to-subscriber direction or the subscriber-to-network direction will have the higher bit rate on a case-by-case basis. Symmetrically divided bit rates are also possible with this implementation.

In the case of the signaling, ATM-based networks provide for requesting a specific transmission rate from the network with the signaling. These signaling protocols allow the use of asymmetrical connections. When, for example, the case of a file download from a server is considered, then a higher transmission capacity is required from the network toward the subscriber. When, in contrast, for example, a video telephony is requested, then, in particular, the same (possibly high) transmission capacity will be needed for both directions. In this example, the evaluation of the signaling protocols automatically adapts the physical transmission rate.

In the case of transmission of information with ABR traffic, the invention interprets the RM cells in, for example, the local exchange. Information about the traffic load of the network (congestion indication signals) are contained in the RM cells. A setting of the bandwidth via the interface between the application level and the physical transmission is undertaken with this information.

In the case of the transmission of information via the Internet, reconfigurations can be undertaken via IP “flow detection” mechanisms. It is likewise possible to set the bandwidth dependent on the employed protocol of the application layer.

The method disclosed here can be combined with known adaption methods (i.e., an automatic identification of the maximally possible transmission rate

via existing leads). Furthermore, the basic idea presented here can also be expanded to other areas, for example, to transmission methods that are not line-bound.

The above-described method is illustrative of the principles of the present  
5 invention. Numerous modifications and adaptations thereof will be readily apparent to those skilled in this art without departing from the spirit and scope of the present invention.